

Rulemaking Comments**PRM-50-104
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241

From: Richard Mathews [richard@alumni.caltech.edu]
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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

I am including comments below from the Nuclear Information and Resource Service (NIRS), which I endorse fully. I will add some additional comments here.

We have 23 Mark I reactors in this country with the same flawed design as at Fukushima. It was predicted several decades ago that these reactors have a 90% chance of catastrophic failure in the event of a loss of cooling. The proof of a scientific theory is its ability to predict new events. This theory was proven at Fukushima, where we saw three out of three operating reactors suffer explosions, meltdowns, and release of large amounts of radiation. Even one of two idle reactors had catastrophic failures.

It does not take an earthquake or tsunami to cause a sudden loss of cooling. At the Santa Susana site overlooking my house, cooling was lost because of clogged pipes. At Three Mile Island it took a stuck valve and human error. At Chernobyl, they tried an experiment to see what would happen if they lost cooling power.

Given the events at Fukushima, we should rethink past efforts to fix the problem of too much pressure building in the Mark I torus. We have added valves to allow manual release of pressure, but that is clearly not sufficient. They used such valves at Fukushima and still had catastrophic failures.

Our emergency planning must take into account these realities we learned in Japan. With Fukushima, we recommended evacuation to 50 miles. Within 50 miles of our own Mark I reactors, we have Chicago, Detroit, Toledo, Philadelphia, Cherry Hill, Baltimore, Trenton, Syracuse, Boston, Providence, Dover, Wilmington (both DE and NC), and the twin cities. Could we evacuate any of these cities?

Also within 50 miles of Mark I reactors are several Canadian towns, including Windsor, Ont. What are the international relations implications if an accident in our country requires a Canadian evacuation? What are the liability implications?

The liability limits we have under Price-Anderson are terribly inadequate. Let's say we needed to evacuate 50 miles from Indian Point. That would be 17 million people from around New York City. Our current liability limits would reimburse people at only about \$700 per person. That would not even cover a week of lodging. We need to revise these limits to account for the amount of population near a reactor. For example, we might set the liability limit for each reactor at \$10,000 times the number of people within 50 miles. Just as we now do an inflation adjustment every 5 years, we would also do a population adjustment.

Here are the NIRS comments, which I endorse.

The on-going events at Fukushima demonstrate that nuclear power disasters can have sustained and far reaching effects. A major concern associated with Fukushima and other nuclear disasters is the evacuation of affected populations. In the United States, emergency planning for nuclear emergencies has remained largely static since 1980, when regulations pertaining to emergency planning were initially enacted after the Three Mile Island accident. These

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plans are outdated and do not adequately protect the health and safety of United States citizens.

Specifically, the current 10-mile emergency evacuation zone does not adequately protect from the effects of ionizing radiation, despite what computer modeling and simulations may demonstrate. The real world experiences of Fukushima and Chernobyl are direct evidence that radiation releases from nuclear accidents can be greater than computer modeling or simulations suggest. Indeed, the accident at Fukushima resulted in sustained and large releases of radiation for a period of several weeks.

More than 150,000 people evacuated near Fukushima, from as far as 25 miles away--50,000 of those, according to the Associated Press (5/16/12) evacuated from outside the mandatory evacuation zones. Meanwhile, the U.S. Nuclear Regulatory Commission and U.S. State Department recommended that Americans within 50 miles of Fukushima evacuate. Even so, as much as 80% of the airborne radiation released at Fukushima blew directly over the Pacific Ocean, rather than populated areas. The NRC cannot rely on favorable wind patterns to protect the American public.

According to the National Academy of Sciences BEIR VII report, there is no safe dose of radiation, and women and children are affected more by radiation than men. Evacuation regulations must be protective of the most vulnerable in the population.

The ingestion pathway EPZ is also grossly inadequate, and should be expanded to 100 miles. Food contamination at both Fukushima and Chernobyl has been far reaching and persistent. In Chernobyl, radionuclides tainted crops and animal products hundreds of miles away. More than 25 years after that accident, sheep in Wales--hundreds of miles away--remain interdicted. Similarly, in Fukushima contamination of rice, milk, and other food has been exhibited 100 miles and more from the site.

Current NRC regulations do not require that emergency exercises take into consideration an initiating or concurrent natural disaster that might further complicate accidents and subsequent evacuation efforts. At Fukushima, a natural disaster (coupled with faulty reactor design) initiated the disaster. Both Fukushima and the U.S. experience with Hurricane Katrina demonstrate the difficulties associated with evacuating when a natural disaster strikes that causes roadways to wash out.

Weather patterns are growing more extreme and dangerous. In 2011, hurricanes, earthquakes, and flooding caused damage to U.S. nuclear reactors. As such, emergency preparedness drills and exercises should include regionally appropriate natural disasters such as droughts, flooding, blizzards, earthquakes, wildfires, and hurricanes.

It is for all these reasons that I request that the NRC adopt the proposed rule expanding emergency planning zones to the respective 25, 50, and 100 mile zones and add a new requirement that emergency exercises include scenarios of regionally appropriate initiating or concurrent natural disasters.

Thank you,

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